REMARKS
ON
THE TREATMENT OF GUNSHOT-WOUNDS OF THE ABDOMEN IN RELATION TO MODERN PERITONEAL SURGERY.*

By J. MARION SIMS, M.D., LL.D., etc.

The death of President Garfield by the assassin's bullet has excited an intense interest in the public mind, throughout the civilised world, in the subject of gunshot-wounds. It was at first supposed that the ball had perforated the liver and traversed the peritoneal cavity; but, as death did not occur in two or three days, it was then thought that it had been deflected down behind the peritoneum in the right iliac fossa. The *post mortem* examination alone revealed the true course and position of the missile. The wound was, then, not one of the peritoneal cavity; it was a flesh-and-bone wound, as much so as if the ball had perforated the thigh and shattered the femur. The President's case is, therefore, excluded from consideration here, as I propose to speak only of shot-wounds involving the peritoneum. Besides, I have elsewhere (*North American Review*, December 1881) given my opinion of the President's wound and its treatment.

The great military surgeons of the day have long felt dissatisfied with the do-nothing system of treating shot-wounds of the abdomen. Longmore and Legouest, Langenbeck and Nussbaum, and, in our own country, Gross and Woodward, Otis, McGuire, and others, have all plainly indicated by their writings the probable future treatment of such wounds.

Does the recent progress of peritoneal surgery lead to a better treatment of gunshot-wounds of the abdomen? is the pressing question of the day, and must be solved sooner or later.

Ovariotomy is the parent of peritoneal surgery. It is based on certain fixed principles, essential to success, which do not belong to it alone, and cannot be monopolised by it. They belong to all operations involving the peritoneum, and to all organs contained in its cavity; and the governing principles of the one must govern all operations of the other.

Peritoneal surgery is a new domain, just opened to the profession at large by a few bold pioneers, who, in science as in the physical world, go before and blaze the way for us to follow and take possession.

The principles essential to success, which guide us in all these operations, were neatly formulated by Mr. Spencer Wells at the meeting of the late International Medical Congress. They are:

1. All hæmorrhages must be promptly controlled by pressure, ligature, or hæmostatic forceps. This principle is common to all operations.

2. The peritoneal cavity must be thoroughly cleaned after operation, and before the abdominal incision is closed. This is the great lesson taught by Thomas Keith, and followed by all successful operators.

3. The abdominal incision, usually in the middle line, must be properly closed.

Twenty years ago, Spencer Wells performed some experiments on the lower animals to prove the importance of uniting the divided edges of the peritoneum at the time of uniting the edges of the parietal section; and, as the propriety of this had lately been questioned, he thought it worth while to bring his pathological specimens from the Museum of the College of Surgeons before the late International Medical Congress, to demonstrate anew the great truth, long ago fully proven. But, independently of Spencer Wells's timely philosophic experiments on the lower animals, we have the best reasons, clinically, why we should always reunite the severed edges of the peritoneum. If the edges of the peritoneum are not embraced in the sutures that close the abdominal section, a raw surface is left on the inner face of the wound, which immediately adheres to the subjacent parts. If it happens to adhere to the omentum, well and good; but if to intestine, the result may or may not be fortunate. For, if the adherent intestine happen to be convoluted in such way as to obstruct the bowel, a fatal result may follow; and we cannot afford to risk the possibility of such accidents. Hence the necessity of uniting the divided edges of the peritoneum. Clinical experience furnishes still another argument why we should always unite the divided edges of the peritoneum. I have seen three cases in which the edges of the peritoneum were firmly united, while the parietal wound gaped widely open. Thus, if the peritoneum had not been closed, there would have been no union whatever in the line of abdominal incision.

There is another principle in peritoneal surgery which is still *sub judice*, and that is—

4. Drainage or no drainage. Chassaignac was the first to demonstrate the importance of drainage in general surgery, and no one now pretends to dispute its value. He was the first to point out the source and dangers of septicæmia and pyæmia, and at the same to designate a preventive in his *tubes à drainage*.

The precepts and practice of Chassaignac are now accepted and acted upon every day and everywhere, but the name of this great French surgeon seems, for the moment, to be forgotten in this relation. In general surgery, complete drainage is essential to successful results. We cannot now dispense with it, whether we use antiseptics or not. If, then, drainage is so important in general surgery, why should we be so much afraid of it in peritoneal surgery? There is no special danger in introducing a glass drainage-tube into the peritoneal cavity at the lower end of the abdominal incision; for it immediately becomes sacculated, and thus nature protects the peritoneum against the presence of a foreign body in its cavity. If there be no bloody serum to drain off, the tube can be removed in a few hours; but if there be any serum, it soon makes its appearance at the surface, and is readily absorbed by sponges placed to receive it.

The drainage-tube is now wholly excluded by Spencer Wells, Thornton, and many others, on the theory that Listerism renders the peritoneal effusion aseptic, and therefore that its absorption will not be attended with danger. But is this always so? In my early operations I occasionally saw cases where the accidental discharge of bloody serum through the external wound gave prompt relief of urgent symptoms, and led to speedy cure. All other operators have had a like experience. With me, these were before antiseptics and drainage-tubes. But even now, under the best antiseptic precautions, are not such cases met with occasionally?

In December 1878 I assisted my friend Mr. Spencer Wells with an ovariotomy in the suburbs of London. The case was a very bad one. Knowing full well its difficulties and dangers, he had wisely procrastinated the operation to the latest moment compatible with safety to his patient. Adhesions in the bottom of the pelvis were universal and very strong, and it was difficult to arrest the exudation of blood. When the external wound was being closed, Mr. Wells saw that there was some exudation still going on; but, thinking that Listerism had rendered it aseptic, he had no fears for the result. The patient did well for about thirty-six hours, when she became rapidly septicæmic, and fears were naturally felt for her safety. Fortunately, just at this juncture, bloody serum was found exuding from the lower angle of the wound. Mr. Wells then removed some of the sutures, and opened the wound a little; there was a free discharge of septic fluid, and the patient made a rapid recovery.

Now, I do not pretend to say that this patient would necessarily have died, if nature had not so unerringly pointed out the method of immediate relief to urgent symptoms. She might possibly have safely eliminated all this septic fluid; and then, again, she might not. But of this I am sure: if the drainage-tube had been used at first, the poisonous bloody serum would have been drained off as it was extravasated, and there would not have been the least cause of alarm for the safety of the patient.

The only valid objection that can be urged against the drainage-tube in abdominal surgery is, not in its immediate danger, but in its ultimate tendency to develop ventral hernia. And this is a serious objection, which we, who advocate its use, must learn to obviate. This is a problem to be worked out, and I am sure it can and will be done. But till then it is better, in doubtful cases, to risk the production of ventral hernia, with all its inconveniences, than to risk the life of the patient.

So much for principles of treatment governing all important peritoneal operations. Now let us see what has already been accomplished in this department of surgery in the last ten years, and then we can determine with greater certainty what we may reasonably expect in the next.

A review of this sort may be irksome for some of you, but, as my argument depends wholly upon what has already been done with such wondrous success in the domain of peritoneal surgery, I must be allowed to state the premises from which my conclusions are drawn.

Extirpation of the uterus for bleeding fibroids was a legitimate sequence of ovariotomy. At first, it was done by accident, then intentionally. The early operations were not successful; but now, Kœberlé and Péan on the Continent, and Spencer Wells and Thomas Keith in

* Read before the New York Academy of Medicine, October 6th, 1881.

England, can boast of magnificent results; and already it is an accepted operation in properly selected cases. Péan's peculiar method of operating is by removing portions of the tumour, *morcellement* (as he terms it), till it is small enough to be easily turned out of the abdominal cavity. He then makes a pedicle of the cervix, and secures it in the lower angle of the abdominal incision, as we formerly did with the pedicle in ovariotomy.

The late Dr. Wright of Cincinnati, the most successful operator in our country, tied the broad ligaments separately, amputated the uterus, then scooped out the cervix funnel-shaped, and brought together the opposing surfaces antero-posteriorly, united them by suture, and dropped the stump back into the peritoneal cavity, and closed the wound. Thus the amputated cervix was covered over with peritoneum, which protected the viscera against the dangers of adhesion to a raw cut surface.

Schröder of Berlin does the same, not knowing he had been preceded by our countryman, Dr. Wright.

And now comes Zwann of Holland (International Medical Congress), who greatly modifies Péan's method of operation. He makes the abdominal incision large enough to draw the tumour out of the cavity at once. After this, he then rapidly introduces three or four temporary sutures, closing the incision sufficiently to prevent the prolapse of the intestines. He next encircles the pedicle with a strong elastic cord, on the principle of Esmarch's bloodless method. He then amputates the tumour just above the cord, and finishes the operation, as Péan does, by transfixing the pedicle antero-posteriorly, securing the ligatures one on each side, and bringing it out at the lower angle of the wound and fixing it there. After this, the abdominal incision is neatly brought together by sutures. The advantages claimed by Zwann are: 1. Facility of operating; 2. Protection of abdominal organs against sudden chill; 3. Prevention of prolapse of intestines; 4. Bloodlessness of operation.

One of the most important advances in peritoneal surgery in connection with bleeding uterine fibroids is Battey's operation to bring about the menopause. It is likely to be substituted entirely for the more formidable operation of extirpation. It is less dangerous; it promptly arrests the bleeding. The fibroid growth begins immediately to decrease, and in some instances it has wholly disappeared.

Freund's operation of extirpating a cancerous uterus by abdomino-vaginal section has not fulfilled the expectations of its author.

Spencer Wells has recently performed successfully a Freund-Porro operation, extirpating a pregnant uterus at the sixth month, in which the cervix was cancerous (BRITISH MEDICAL JOURNAL, October 29th, 1881).

Bantock has also lately extirpated with success a cancerous uterus by Freund's method. These gentlemen have greatly simplified the operation (*ib.*, November 12th, 1881).

Half a century ago, or more, Blundell suggested the removal of the cancerous uterus by the vagina, and performed the operation. The Blundell vaginal operation has recently been performed successfully by Professor Beverly Cole of San Francisco. He separated the cervix uteri from its attachments with a Paquelin cautery, pulled down the uterus, secured the broad ligaments, and removed the uterus by a comparatively bloodless operation.

Dr. Lane of San Francisco, late Professor of Surgery in the University of the Pacific, has performed this operation successfully. So has Dr. Clinton Cushing of San Francisco. Thus we see Blundell's operation for extirpating the uterus through the vagina has so far been monopolised by the surgeons of San Francisco.

Extirpation of the spleen cannot be claimed as an offshoot of ovariotomy. According to statistics worked up by the late Dr. Otis of the Army Medical Museum, Washington (*Medical and Surgical History of the War*, etc., part second, surgical volume, page 152), the spleen has been extirpated between 1549 and 1849, sixteen times with but one death; and, between 1849 and 1869, ten times with five deaths. The deaths were from hæmorrhage, immediate or secondary.

Splenotomy has lately been done by Péan, Spencer Wells, Martin (of Berlin), and others. I assisted at Spencer Wells's last operation. The patient died of secondary hæmorrhage. The spleen weighed ten pounds, and there were three pounds of blood in the peritoneal cavity. In this operation, it is important to tie the pedicle in segments, to guard against the possible slipping of the ligature.

Extirpation of the kidney by the lumbar region has been often done successfully. Martin (of Berlin) has removed the kidney six times by abdominal section, with four recoveries. The operation has been done by others.

[*To be continued.*]

MEDICAL MAGISTRATE.—Dr. Leeper has been appointed a justice of the peace for Fermanagh County.

OBSERVATIONS
ON
EXCISION OF THE KNEE IN EARLY LIFE.

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IN a contribution to Operative Surgery, published by me in the *Dublin Medical Journal* some years ago, in which special attention was directed to the operation of resection of the knee-joint, I mentioned that the procedure was one which all reflecting surgeons must admit to be still *sub judice*. The statistics of this operation then quoted went far to justify this remark; so unfavourable were they, that some surgeons of ability and experience went so far as to advocate an abandonment of the operation altogether. Though there are few, if any, who would go so far as this in the direction of complete abandonment, yet still surgical opinion is in a curiously unsettled condition in reference to the merits of the procedure. In illustration of this, I may mention the opinion of one or two authorities of eminence who have recently written ably on this subject. Mr. Holmes maintains that "excision of the knee is one of the indispensable resources of surgery, and is useful in all three classes of cases—viz., in those where otherwise amputation would be indicated; in those where expectant treatment might succeed, but is dubious; and in cases of vicious ankylosis". Mr. C. Macnamara, on the other hand, is of opinion that "excision of the knee will year by year become less frequent in our hospitals". Mr. Mac Cormac has stated truly that there is no operation "about which controversy has more hotly raged". In Germany, also, the same wide difference of opinion in reference to the merits of resection is observed. Recently, Kœnig, of Göttingen, has stated, at the congress of German surgeons in Berlin, in a communication on Early Excision in Tuberculous Disease of the Joints, that it was only when the general condition of the patient was seriously implicated, or when there was any danger of the occurrence of this, that resection should be done. I am glad, however, to observe that a doctrine so questionable did not meet with general acceptance; Dr. Hüter in particular, a surgeon of well-deserved repute, attaching a much higher value to the functional results of resection in such cases than the author of the paper did.*

These opposite views, I think, fairly represent the existing state of surgical opinion on this important topic. I cannot think, with Mr. Holmes, that the operation should ever be regarded in the light of a substitute for amputation, as the indications for the latter should never be those for the former. In other words, if the injury or disease be of such a nature as to indicate amputation, resection should hardly be contemplated. As regards, however, the question of adopting the operation as a substitute for any less formidable method of procedure, including expectant treatment, the comparative merits of these can, I think, fairly be contrasted. Doubtless, if cases in which ultimately resection may be indicated are obtained at a sufficiently early stage of the development of the disease, and expectant treatment can be efficiently carried out, a limb as useful, and an ankylosis as firm, may at times possibly be obtained in after-resection. The unfrequency of the operation among the wealthier classes must, to a great extent, be attributed to the fact that, in dealing with them, the joint-disease comes under observation at an early stage of its development, and so much more facility in carrying out expectant treatment exists; though I have no doubt that even among them many a limb has been sacrificed to a too exclusive reliance on a surgical inactivity which at times is the reverse of masterly. Among the poorer classes there are several reasons why expectancy, if I may use such a term, is impossible, or almost so. Among them may be mentioned the difficulty of keeping patients a sufficient length of time in hospital; the want of confidence that is observed among the poorer classes of patients in any course or plan of treatment, the effects of which are not soon apparent or tangible; and, lastly, that surgical advice is, as a rule, seldom sought for until the disease, whether it be in the bone or in the soft structures, is firmly established in the joint. In truth, we do not, as a rule, see the case until the line is passed that separates the stage where absolute rest, brought about by fixing the limb with gypsum, silicate of potash, starch or paraffin bandages, leather or poroplaster splints, or some other of the many recently introduced methods, all of more or less efficiency, combined with generous diet and general antistrumous treatment, may be of service in bringing about a cure. In fact, in the vast majority of cases we find the disease, not in an incipient stage, but having already taken

* *London Medical Record*, June 15th, 1881.